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1 Routine/Function Prologues

1.1 Fortran: Module Interface *cmapdomain_module.F90* (Source File: *cmapdomain_module.F90*)

Contains routines and variables that define the native domain for CMAP precipitation product.

INTERFACE:

```
module cmapdomain_module
```

USES:

```
use cmapdrv_module
```

ARGUMENTS:

```
type(cmapdrvdec) :: cmapdrv
integer :: mi
real, allocatable :: rlat(:)
real, allocatable :: rlon(:)
integer, allocatable :: n11(:)
integer, allocatable :: n12(:)
integer, allocatable :: n21(:)
integer, allocatable :: n22(:)
real, allocatable :: w11(:),w12(:)
real, allocatable :: w21(:),w22(:)
```

1.1.1 *defnatcmap.F90* (Source File: *cmapdomain_module.F90*)

Defines the kgds array describing the native forcing resolution for CMAP data.

REVISION HISTORY:

11Dec2003: Sujay Kumar; Initial Specification

INTERFACE:

```
subroutine defnatcmap()
```

USES:

```
use lisdrv_module, only: lis
implicit none
```

ARGUMENTS:

```
integer :: kgdsi(200)
```

CONTENTS:

```
call readcmapcrd(cmapdrv)
kgdsi(1) = 4
kgdsi(2) = 512
kgdsi(3) = 256
kgdsi(4) = 89463
kgdsi(5) = 0
kgdsi(6) = 128
kgdsi(7) = -89463
kgdsi(8) = -703
kgdsi(9) = 703
kgdsi(10) = 128
kgdsi(20) = 255
call allocate_cmap_ip(lis%d%lnc*lis%d%lnr)
call def_cmap_ip_input(kgdsi)
```

1.1.2 allocate_cmap_ip (Source File: *cmapdomain_module.F90*)

Allocates memory for CMAP interpolation variables

INTERFACE:

```
subroutine allocate_cmap_ip(N)
```

CONTENTS:

```
allocate(rlat(n))
allocate(rlon(n))
allocate(n11(n))
allocate(n12(n))
allocate(n21(n))
allocate(n22(n))
allocate(w11(n))
allocate(w12(n))
allocate(w21(n))
allocate(w22(n))
mo = n
nn = n
w11 = 0.0
w12 = 0.0
w21 = 0.0
w22 = 0.0
```

1.1.3 def_cmap_ip_input (Source File: *cmapdomain_module.F90*)

Calculates weights and neighbor information required for CMAP interpolation

INTERFACE:

```
subroutine def_cmap_ip_input (kgds)
```

USES:

```
use spmdMod
use lisdrv_module, only:lis
```

CONTENTS:

```
!-----
! Calls the routines to decode the grid description and
! calculates the weights and neighbor information to perform
! spatial interpolation. This routine eliminates the need to
! compute these weights repeatedly during interpolation.
!-----

mo = lis%d%lnc*lis%d%lnr
if(kgdso(1).ge.0) then
    call gdswiz(kgdso, 0,mo,fill,xpts,ypts,rlon,rlat,nn,0)
endif
call gdswiz(kgds,-1,nn,fill,xpts,ypts,rlon,rlat,nv,0)
do n=1,nn
    xi=xpts(n)
    yi=ypts(n)
    if(xi.ne.fill.and.yi.ne.fill) then
        i1=xi
        i2=i1+1
        j1=yi
        j2=j1+1
        xf=xi-i1
        yf=yi-j1
        n11(n)=ijkgds(i1,j1,kgds)
        n21(n)=ijkgds(i2,j1,kgds)
        n12(n)=ijkgds(i1,j2,kgds)
        n22(n)=ijkgds(i2,j2,kgds)
        if(min(n11(n),n21(n),n12(n),n22(n)).gt.0) then
            w11(n)=(1-xf)*(1-yf)
            w21(n)=xf*(1-yf)
            w12(n)=(1-xf)*yf
            w22(n)=xf*yf
        else
            n11(n)=0
            n21(n)=0
            n12(n)=0
            n22(n)=0
        endif
    else
        n11(n)=0
    end
```

```
n21(n)=0  
n12(n)=0  
n22(n)=0  
endif  
enddo  
mi = cmapdrv%ncold*cmapdrv%nrold  
endif
```